

REMARKS

Status Of Application

Claims 1-19 are pending in the application; the status of the claims is as follows:

Claim 1, 2, 4, 5, 10, 11, 13-16, 18, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,602,791 B2 to Ouellet et al. ("Ouellet") in view of U.S. Patent No. 5,846,396 to Zanzucchi et al. ("Zanzucchi") and U.S. Application Publication No. US 2002/0124896 A1 to O'Connor et al. ("O'Connor").

Claims 3, 12, and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ouellet in view of Zanzucchi and O'Connor as applied to claims 1, 2, 4, 5, 10, 11, 13-16, 18, and 19, and further evidenced by Wikipedia.

Claims 6, 7, and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ouellet in view of Zanzucchi.

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Ouellet in view of Zanzucchi as evidence by Wikipedia.

35 U.S.C. § 103(a) Rejection

The rejection of claims 1, 2, 4, 5, 10, 11, 13-16, 18, and 19 under 35 U.S.C. § 103(a), as being unpatentable over Ouellet in view of Zanzucchi and O'Connor, is respectfully traversed based on the following.

Ouellet shows a method for forming micro-channels in a substrate including semiconductor devices (5:1-5). An opening 26 is formed in layers above a silicon dioxide layer 18, that allows isotropic etching of an opening 34. Ouellet also includes a description of a prior art device in Figure 1 (3:46-65). In this device, layers of polymer substrates with micro-channels formed therein are thermally bonded together (3:54-58).

Zanzucchi shows a liquid distribution system. The distribution system may include layers of plastic (19:19-44).

O'Connor shows a modular microfluidic system including microfluidic coupling devices 20 including an adhesive layer or coating to bond the microfluidic coupling device into its desired position ([0056]).

In contrast to the cited references, claim 1 includes:

A microfluidic device comprising:

...
wherein at least one of a material constituting the first joint surface and a material constituting the second joint surface is an elastic material having a self-sealing feature.

As described in the specification, self-sealing is a property where the two surfaces form a liquid tight seal without adhesives or external pressure.

[0050] The self-sealing feature of the channel chip 13 permits the channel chip 13 to adhere spontaneously without applying external force or using an adhesive merely by placing the channel chip 13 on the surface 12a of the glass substrate 12, so that the lower surface 13b coheres to the surface 12a of the glass substrate 12. Then, a sealing feature is brought out between the lower surface 13b and the surface 12a and is maintained, and therefore no liquid therebetween leaks outside. As a material having such a feature, for example, a PDMS (Polydimethylsiloxane) that is one kind of a silicone rubber is used. Examples of commercial items of the PDMS include, for instance, Dow Corning "Sylgard 184".

Although PDMS is discussed in the prior art section of Oullet, there is no discussion of a self-sealing property and the layers in the prior art devices of Oullet are thermally bonded (3:54-58). Each of the examples in Zanzucchi is thermally bonded (33:55-35:22). As mentioned above, O'Connor uses an adhesive layer or coating for bonding. None of the cited references shows or suggests a "self-sealing feature." To support a *prima facie* case for obviousness, the cited references must show or suggest, alone or in combination, every limitation of the claim. MPEP §2143.03. Because none of the cited references shows or

suggests a “self-sealing feature,” they do not support a *prima facie* case for obviousness of claim 1 and claim 1 is patentably distinct from the prior art. Claims 2, 4 and 5 are dependent upon claim 1 and thus include every limitation of claim 1. Therefore, the cited references also do not support a *prima facie* case for obviousness of claims 2, 4 and 5, and claims 2, 4 and 5 are patentably distinct from the prior art.

Also in contrast to the cited references, claim 10 includes:

A pump unit used for a microfluidic device ...

...
wherein a material constituting the first joint surface is an elastic material having a self-sealing feature.

As noted above with regard to claim 1, the cited references do not show or suggest a “self-sealing feature.” Therefore, the cited references do not support a *prima facie* case for obviousness of claim 10 and claim 10 is patentably distinct from the prior art. Claims 11, 13 and 14 are dependent upon claim 10 and thus include every limitation of claim 10. Therefore, the cited references also do not support a *prima facie* case for obviousness of claims 11, 13 and 14, and claims 11, 13 and 14 are patentably distinct from the prior art.

Also in contrast to the cited references, claim 15 includes:

A channel unit used for a microfluidic device including ...

...
wherein a material constituting the second joint surface is an elastic material having a self-sealing feature.

As noted above with regard to claim 1, the cited references do not show or suggest a “self-sealing feature.” Therefore, the cited references do not support a *prima facie* case for obviousness of claim 15 and claim 15 is patentably distinct from the prior art. Claims 16, 18 and 19 are dependent upon claim 15 and thus include every limitation of claim 15. Therefore, the cited references also do not support a *prima facie* case for obviousness of claims 16, 18 and 19, and claims 16, 18 and 19 are patentably distinct from the prior art.

Accordingly, it is respectfully requested that the rejection of claims 1, 2, 4, 5, 10, 11, 13-16, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over Ouellet in view of Zanzucchi and O'Connor, be reconsidered and withdrawn.

The rejection of claims 3, 12, and 17 under 35 U.S.C. § 103(a), as being unpatentable over Ouellet in view of Zanzucchi and O'Connor as applied to claims 1, 2, 4, 5, 10, 11, 13-16, 18, and 19, and further evidenced by Wikipedia., is respectfully traversed based on the following.

As noted above Ouellet, Zanzucchi and O'Connor do not show or suggest a "self-sealing feature." Wikipedia also does not show or suggest this feature. Therefore, the cited references do not show or suggest every limitation of claims 1, 10 and 15. Claims 3, 12 and 17 are dependent upon claims 1, 10 and 15, respectively, and thus include every limitation of claims 1, 10 and 15, respectively. Therefore, the cited references do not support a *prima facie* case for obviousness of claims 3, 12, and 17, and claims 3, 12 and 17 are patentably distinct from the prior art.

Accordingly, it is respectfully requested that the rejection of claims 3, 12, and 17 under 35 U.S.C. § 103(a) as being unpatentable over Ouellet in view of Zanzucchi and O'Connor as applied to claims 1, 2, 4, 5, 10, 11, 13-16, 18, and 19, and further evidenced by Wikipedia, be reconsidered and withdrawn.

The rejection of claims 6, 7, and 9 under 35 U.S.C. § 103(a), as being unpatentable over Ouellet in view of Zanzucchi, is respectfully traversed based on the following.

Also in contrast to the cited references, claim 6 includes:

A microfluidic device comprising:

...
wherein the sheet-like member is made from an elastic material having a self-sealing feature and is detachably joined to at least one of the channel unit and the pump unit.

As noted above with regard to claim 1, the cited references do not show or suggest a "self-sealing feature." Therefore, the cited references do not support a *prima facie* case for obviousness of claim 6 and claim 6 is patentably distinct from the prior art. Claims 7 and 9 are dependent upon claim 6 and thus include every limitation of claim 6. Therefore, the cited references also do not support a *prima facie* case for obviousness of claims 7 and 9, and claims 7 and 9 are patentably distinct from the prior art.

Accordingly, it is respectfully requested that the rejection of claims 6, 7, and 9 under 35 U.S.C. § 103(a) as being unpatentable over Quellet et al. in view of Zanzucchi et al., be reconsidered and withdrawn.

The rejection of claim 8 under 35 U.S.C. § 103(a), as being unpatentable over Quellet et al. in view of Zanzucchi et al. as evidenced by Wikipedia, is respectfully traversed based on the following.

As noted above with regard to claim 6, Oullet, Zanzucchi and O'Connor do not show or suggest a "self-sealing feature." Wikipedia also does not show or suggest this feature. Therefore, the cited references do not show or suggest every limitation of claim 6. Claim 8 is dependent upon claim 6, and thus include every limitation of claim 6. Therefore, the cited references do not support a *prima facie* case for obviousness of claim 8, and claim 8 is patentably distinct from the prior art.

Accordingly, it is respectfully requested that the rejection of claim 8 under 35 U.S.C. § 103(a) as being unpatentable over Quellet et al. in view of Zanzucchi et al. as evidenced by Wikipedia, be reconsidered and withdrawn.

CONCLUSION

Wherefore, in view of the foregoing amendments and remarks, this application is considered to be in condition for allowance, and an early reconsideration and a Notice of Allowance are earnestly solicited.

This Amendment does not increase the number of independent claims, does not increase the total number of claims, and does not present any multiple dependency claims. Accordingly, no fee based on the number or type of claims is currently due. However, if a fee, other than the issue fee, is due, please charge this fee to Sidley Austin LLP Deposit Account No. 18-1260.

If an extension of time is required to enable this document to be timely filed and there is no separate Petition for Extension of Time filed herewith, this document is to be construed as also constituting a Petition for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed.

Any other fee required for such Petition for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17, other than the issue fee, and not submitted herewith should be charged to Sidley Austin LLP Deposit Account No. 18-1260. Any refund should be credited to the same account.

Respectfully submitted,

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December 28, 2007